CLAIMS

We claim:

1. A composition for exposing antigenic epitopes of a microorganism, comprising a general enrichment media and at least one structure modifying organic chemical.

2. The composition of claim 1, wherein the structure modifying organic chemical is selected from the group consisting of 2,4-dinitrophenol and carbonyl cyanide-m-chlorophenyl hydrazone.

3. The composition of either claim 1 or 2, wherein the general enrichment media is selected from the group consisting of Terrific Broth, SOB medium, SOC medium, LB medium, NZCYM medium, minimal medium, lactose broth, buffered peptone water, Brain Heart Infusion medium, Haemophilus broth, tryptic soy broth, and nutrient broth.

4. The composition of claim 3, wherein the structure modifying organic chemical is 2,4-dinitrophenol.

5. A method for detecting a microorganism in a test sample, comprising:

(a) contacting a test sample with a composition comprising general enrichment media and at least one structure modifying organic chemical, thereby forming a mixture;

(b) incubating the mixture for a time sufficient to allow for detectable levels of microorganisms to develop; and

(c) detecting the presence of specific microorganisms in the mixture.

6. The method according to claim 5, further comprising contacting the mixture with a detergent, wherein said contact further exposes antigenic epitopes prior to detection.

7. The method according to claim 6, further comprising heating the combination of the mixture and detergent prior to detection.

8. The method according to either claim 6 or 7, wherein the detergent is an anionic detergent.

9. The method according to claim 7, wherein the detergent is selected from the group consisting of sodium dodecyl sulfate and sodium deoxycholate.

10. The method according to claim 6 or 7, wherein the detergent is a non-ionic detergent.

11. The method according to claim 10, wherein the detergent is selected from the group consisting of NP-40, tergitol, and triton X-100.

12. The method according to claim 7, wherein heating is performed at about 40°C to about 121°C for a time sufficient to further expose antigenic epitopes.

13. The method according to claim 5, wherein the microorganism is selected from the group consisting of *Listeria*, Enterohemorrhagic *E. coli*, *Salmonella*, and *Campylobacter*.

14. A method for detecting the presence of *Listeria*, Enterohemorrhagic *E. coli*, *Salmonella*, or *Campylobacter* in a test sample, comprising:

(a) contacting a test sample with a composition comprising general enrichment media and at least one structure modifying organic chemical, thereby forming a mixture;

(b) incubating the mixture for a time sufficient to allow for detectable levels of microorganisms to develop, and

(c) detecting the presence of specific microorganisms in the mixture, wherein a positive detection result indicates the presence of *Listeria*, Enterohemorrhagic *E. coli*, *Salmonella*, or *Campylobacter* in the test sample.

15. The method according to claim 14, further comprising contacting the mixture with a detergent, wherein said contact further exposes antigenic epitopes prior to detection.

16. The method according to claim 15, further comprising heating the combination of the mixture and detergent prior to detection.

17. The method according to claim 15 or 16, wherein the detergent is an anionic detergent.

18. The method according to claim 16, wherein the detergent is selected from the group consisting of sodium dodecyl sulfate and sodium deoxycholate.

19. The method according to claim 15 or 16, wherein the detergent is a non-ionic detergent.

20. The method according to claim 19, wherein the detergent is selected from the group consisting of NP-40, tergitol, and triton X-100.

21. The method according to claim 16, wherein heating is performed at about 40°C to about 121°C for a time sufficient to further expose antigenic epitopes.

22. The method according to claim 14, wherein detection occurs by an immunoassay.

23. The method according to claim 22, wherein the immunoassay is selected from the group consisting of a visual immunoprecipitate assay, an enzyme linked immunoassay, chemiluminescence , and immunoblotting.

24. The method according to claim 23, wherein the immunoassy is a visual immunoprecipitate assay.

25. The method according to claim 23, wherein the detection utilizes a complementary monoclonal antibody, polyclonal antibody, or an antibody fragment, and wherein said antibody or antibody fragment is specific for a highly conserved cell wall epitope.

26. A method for detecting a microorganism in a test sample, comprising contacting a test sample containing a microorganism with an immunoaffinity based detection device, wherein said test sample has been previously propagated in the presence of a structure modifying organic chemical.

27. A method for propagating a microorganism such that cell wall antigen epitopes of the microorganism are altered, comprising contacting a test sample with a composition comprising general enrichment media and at least one structure modifying organic chemical and propagating the microorganism therein.

28. A method for detecting microorganism specific epitopes on a target microorganism in a test sample, comprising:

(a) propagating a microorganism in a test sample in a permissive general enrichment media, wherein said media comprises a structure modifying organic chemical, and

(b) contacting the test sample with a microorganism specific antibody linked to a detecting reagent, wherein reaction with the antibody indicates the presence of the microorganism.

29. The method according to claim 28, wherein the contact between the test sample and the antibody occurs in device or assay system.

30. The method according to claim 29, wherein the assay system is selected from the group consisting of a visual immunoprecipitate assay, an enzyme linked immunoassay, chemiluminescence, and immunoblotting.

31. The method according to claim 29, wherein the assay device is a lateral flow detection device.

32. The method according to any one of claims 28-31, wherein the antibody is specific for a microorganism selected from the group consisting of *Salmonella*, Enterohemorrhagic *E. coli*, *Listeria*, and *Campylobacter*.

33. A lateral flow device for detecting a target microorganism in a sample comprising a microorganism specific antibody and a test sample previously propagated in a general enrichment media, said media comprising at least one structure modifying organic chemical.

34. The device of claim 33, wherein the antibody is specific for *Salmonella*.

35. The device of claim 33, wherein the antibody is specific for Enterohemorrhagic *E. coli*.

36. The device of claim 33, wherein the antibody is specific for *Listeria*.

37. The device of claim 33, wherein the antibody is specific for *Campylobacter*.

38. The method of any one of claims 5, 14, 26, and 28, wherein said test sample is selected from the group consisting of a food product, water, an environmental sample, a biological sample, a human specimen, and a veterinary sample.